

## **REMARKS**

Claims 1-13 are pending in the application.

Claims 1-13 stand rejected.

Claims 1-13 are amended.

Claims 14-20 are new. No new subject matter is added.

### ***Claim Rejections – 35 U.S.C. § 102***

Claims 1-13 stand rejected under 35 U.S.C. § 102(b) according to U.S. Patent No. 4,955,065 (Ulichney).

The rejection is traversed; however Applicant amends claims 1-13 to further clarify the subject matter and to facilitate bringing this case to allowance. Amended claim 1 recites a method for reducing image noise in a scanned image, comprising:

decreasing a color level of the scanned image by reducing a number of bits of a full color level of one or more pixels in the scanned image to form a reduced color level image;

composing a pattern having less color level than the full color level; and  
recombining the full color level of the one or more pixels in the scanned image by combining the reduced color level image with the pattern.

Ulichney discloses a system for processing bits representing digitized images to produce perceptually similar images with fewer bits than the original. See Ulichney column 1, lines 10-14. The Examiner states at page 2 that Ulichney discloses a method for reducing image noise, and references column 3 lines 18-21. The applicant respectfully disagrees. Ulichney is directed to a method of error diffusion in which a halftone image is generated to approximate a continuous-tone image (col. 2, lines 51-61). The artifacts created during the generation of the halftone image are not due to image noise, but rather are created as a result of the error diffusion method, in which the error from one pixel is passed on to the next pixel. Ulichney seeks to reduce the number of artifacts by varying the pattern of the error diffusion method (col. 2 lines 62-66).

Furthermore, Ulichney fails to disclose recombining the full color level of the one or more pixels in the scanned image by combining the reduced color level image with the pattern, as recited by amended claim 1. Ulichney describes that an error value from a nearby

previously processed pixel is used to determine a correction value for a modified pixel value. The modified pixel value is then quantized to form a halftone or dithered output pixel value (col. 3, lines 2-13). Since the correction value is determined for a nearby pixel, rather than the modified pixel itself, it logically follows that Ulichney does not describe or even suggest recombining the full color level of a pixel. Rather, as previously mentioned, Ulichney Describes distributing an error value between pixels to reduce artifacts of the image. The halftone or dithered output pixels of Ulichney similarly do not disclose recombining the full color level, as they are instead defined by one or only a few bits of data (col. 1, lines 52-57).

Claims 2-5 and 7 depend on claim 1 and are allowable for the same or similar reasons in addition to the further novel features recited therein. For example, claim 3, as amended, recites the method of claim 1 wherein combining the reduced color level image with the pattern restores the one or more pixels to include a same number of bits as before the color level is decreased. As previously discussed, the correction value for a modified pixel of Ulichney is determined based on an error value from a nearby pixel. Therefore the error value is independent of the color image level or associated number of bits of the modified pixel, and hence it follows that it cannot be used to restore a same number of bits of the pixel.

Claim 6 is amended to recite all the features of original claim 1 and any intervening claim. Therefore, claim 6 has already been examined on the merits, and the current amendment does not necessitate any further search of prior art. Claim 6, as amended, recites a method for reducing image noise, wherein the image is composed of a plurality of pixels having a scale of bits, comprising the steps:

reducing a plurality of bits of the scale of each pixel in the image; and  
recombining the scale of each pixel in the image, wherein the step of recombining the scale of each pixel in the image comprises a halftone pattern method, wherein a pattern composed by the halftone pattern method is a matrix pattern, and wherein the row and column numbers of the matrix pattern are dependent on the number of bits reduced in the step of reducing a plurality of bits of the scale of each pixel in the image.

In addition to Ulichney failing to disclose a method for reducing image noise, as previously discussed, Ulichney fails to disclose recombining the scale of each pixel comprising the halftone pattern method recited in claim 6. The Examiner references the image processing

systems recited by claims 6 (lines 59-66) and 11 (entire claim) of Ulichney as disclosing the halftone pattern method. Applicant respectfully disagrees. Nothing in either of the Ulichney claims disclose a matrix pattern having row and column numbers, let alone wherein these numbers are dependent on a number of reduced bits. Specifically with respect to the Examiner's reference to Ulichney's claim 6, the lines of pixels are not rows of a halftone pattern matrix. Rather, each of the continuous tone pixels in the lines of pixels are transformed into halftone pixel image data (col. 1, lines 46-60).

Accordingly, withdrawal of the rejection of claims 1-7 is respectfully requested.

Amended claims 8-13 and new claims 14-20 recite some of the same features as claims 1-7 and are believed to be allowable for the same or similar reasons as discussed above, in addition to the further novel features recited therein.

Any statements made by Examiner that are not addressed by Applicant do not necessarily constitute agreement by the Applicant. In some cases Applicant may have amended or argued the allowability of independent claims thereby obviating grounds for rejection of the dependent claims.

## ***CONCLUSION***

For the foregoing reasons, reconsideration and allowance of the pending claims is requested. Please telephone the undersigned at (503) 224-2170 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,  
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